

G. B. SNOW.
Dental Saliva-Ejector.

No. 213,356.

Patented Mar. 18, 1879.

Fig. 1

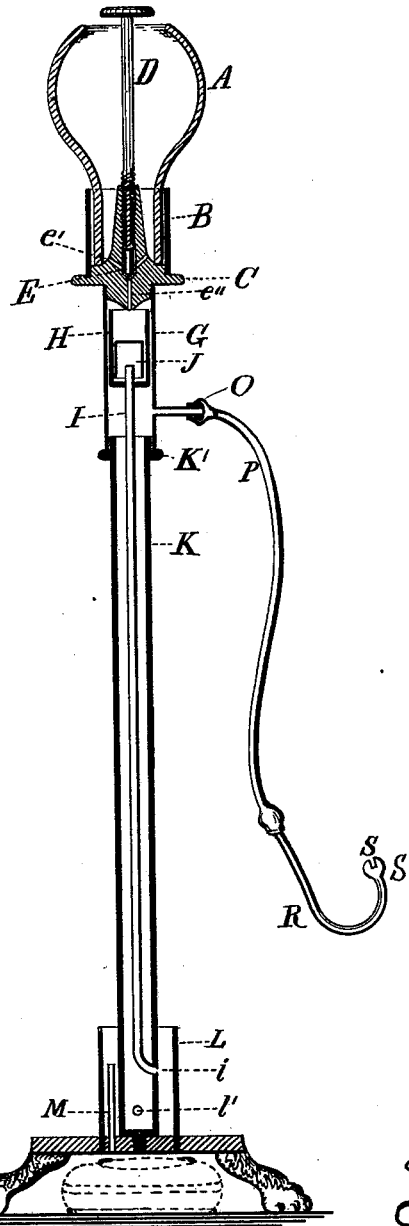


Fig. 2



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GEORGE B. SNOW, OF BUFFALO, NEW YORK, ASSIGNOR TO THE BUFFALO DENTAL MANUFACTURING COMPANY, OF SAME PLACE.

IMPROVEMENT IN DENTAL SALIVA-EJECTORS.

Specification forming part of Letters Patent No. 213,356, dated March 18, 1879; application filed September 18, 1876.

To all whom it may concern:

Be it known that I, GEORGE B. SNOW, of the city of Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Apparatus for Removing Saliva from the Mouth during the performance of dental operations therein, which is fully set forth in the following specification, reference being had to the accompanying drawings.

This invention relates to a form of apparatus for the purpose specified, in which the gravitation of a column of water is used as a means of obtaining the motive power; and it consists in the combination, with a reservoir provided with an adjustable outlet, from which the water escapes by drops, of an upright tube of small bore and considerable length, through which the water passes, alternating with air, thus producing a partial exhaustion of a chamber surrounding the top of said upright tube.

It also consists in the combination, with the small upright tube and exhaustion-chamber, of a larger or separating tube, into which the saliva and air drawn from the mouth are delivered and separated, the saliva passing downward by gravitation and the air passing upward into the exhaustion-chamber.

It also consists in the combination, with the said separating-tube, of a cup surrounding its foot, kept partially full of water by the discharge from the reservoir through the small tube, the effect being to trap the lower end of the separating-tube, rendering it air-tight, while it is still left free to discharge its contents of saliva.

In the accompanying drawings, Figure 1 is a sectional view of the apparatus, and Fig. 2 a cross-section of the mouth-piece.

A represents the reservoir for the water, which forms a water-tight connection by means of the ferrule B with the valve-casing C. The rod D screws into a stem formed on the upper portion of the valve-casing C, and its lower end, being reduced in size and formed of a conical shape, constitutes the valve E. Side passages *e'* allow the admission of water from the reservoir A, and when the valve E is partially opened by slightly un-

screwing the rod D the water finds its exit by the passage *e''* through the lower side of the valve-casing, which is prolonged into a pointed form, to insure the delivery of the water at the center, as shown, and into the cup or exhaustion-chamber H. The bottom of this chamber is pierced by the tube I, which extends a short distance up into the chamber, and which is surmounted by the inverted cup or bonnet J, the lower edge of which extends a little below the upper end of the tube I.

The tube I should be of such small bore that water will fill it completely across by the force of capillary attraction, and will not run down its sides and allow air to pass. A few drops of water will then operate as a piston, if placed within it, and it is upon this point that the utility of the apparatus depends. The tube I extends downward for a considerable distance, the power of the apparatus being directly proportional to its length.

The casing or separating-tube G K is shown as inclosing the tube I, which makes a right-angled bend at its lower end, and comes to the outside of the separating-tube K. The upper portion of the casing G is of such a diameter as to allow a certain amount of space between it and the exhaust-chamber H, which it surrounds. It has in its side the nozzle O, by which connection is made with the flexible tube P and the mouth-piece R S. The lower portion, K, extends downward below the end of the tube I and opens laterally into the cup L, into which its end is fastened.

The office of the casing G K is to form a separating-chamber in which the air and saliva drawn from the mouth may be separated, the air passing upward into the exhaust-chamber, and the saliva gravitating to its bottom and escaping into the cup L, through the openings *l'*, which are under water. As the upper end of the overflow-pipe M is above them, the casing G K is thus trapped and rendered air-tight, while it is left free to discharge its fluid contents.

The apparatus may be mounted in any way deemed preferable. It may be fastened to the wall or suspended to a convenient projection. I prefer, however, for the sake of portability and ease of adjustment, to place it on a stand.

It is accordingly shown in the drawings as attached to the foot-piece N, which is arched to allow of the introduction of a proper receptacle underneath to catch the overflow from the pipe M.

The nozzle O connects with the mouth-piece R by means of the flexible tube P. The mouth-piece has a bulbous end, to obviate pain from its contact with the mouth of the patient, and the opening therein for the entrance of the saliva has a deep cross-cut, as shown in Fig. 2, to prevent stoppage from closure of the orifice by pressure against the mouth of the patient.

If the rod D is partially unscrewed, so as to start the valve E from its seat, water will pass through the passages *e' e''*, and will drip into the exhaust-chamber H. When it rises above the mouth of the tube I it will discharge itself down that tube until it is drawn below the level of the lower edge of the bonnet J, when it will be followed by a certain quantity of air. The level of the water will rise again as the supply continues, and it will again discharge itself as before, and each body of water will completely occupy the bore of the tube for a certain distance on account of its small size.

It will be seen, then, that the whole length of the tube I will become filled with alternate sections of water and air, gravitating to its bottom, and discharging there into the cup L.

The air being thus withdrawn from the exhaustion-chamber H and the casing G K, they will become partially exhausted, and the water will be drawn from the bottom of the cup L into the casing K until the gravity of the

column of water therein contained is sufficient to overcome the viscosity of the saliva and draw it through the mouth-piece and flexible tube P into the casing at O. The saliva will then pass downward through the tube K, and any air entering with it will rise and be removed through the tube I.

The power of the instrument depends upon the height of the column of water which is drawn into the tube K; hence its power is directly proportional to the length of this tube and of the tube I.

Having thus described the construction and operation of my improved hydraulic saliva-ejector, I claim as my invention and desire to secure by Letters Patent—

1. The combination, in an instrument for drawing saliva from the mouth, of a water-supply and a vertical tube of small bore, occupied by alternate sections of water and air, passing downward by the action of gravity upon the water in the said tube, substantially as described.

2. The combination, in an instrument for drawing saliva from the mouth, of the reservoir A, tube I, chamber H, tube P, and mouth-piece R S, substantially as described.

3. The combination, in an instrument for drawing saliva from the mouth, of the tube K, cup L, and overflow M, substantially as described.

GEORGE B. SNOW.

Witnesses:

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